

# Center for Self Organizing Intelligent Systems

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**The center investigates electronic and software systems that emulate the learning and reasoning capabilities of the human mind and applies them to commercial products**

## Background

Established in 1993 to build on its core intelligent system technologies to develop commercializable products for production and marketing to the economic advantage of the State of Utah. The center works with Utah industry to identify intelligent system solutions for new or existing commercial products. The center strives to maintain its national and international reputation as a leading contributor to the advancement of intelligent systems research.

## Technology Development Progress

During the funding period of the center intelligent systems technology has evolved to include any device and/or software concept which attempts to artificially emulate the unique cognizance and control abilities of the human mind. For example, artificial neural networks are designed to mimic the ability of the brain and central nervous system to learn and generalize from past experience.

Fuzzy logic was introduced as a way of emulating the reasoning processes fundamental to human intelligence.

Virtual presence controllers attempt to place a remote human operator or controller in a virtual environment identical to that encountered by the controlled process.

Neuro-control emulates the sensory and communication mechanisms of the human neural system.

## Highlights and Accomplishments

The intelligent robotic vehicles technology has generated several commercial products, including the **Red Rover Educational Kit** and **The New Red Rover Product**, both being commercialized by **Visionary Products Inc.**, Richmond, Utah and the **LEGO Group A/S**. Red Rover is an educational computer driven vehicle demonstrating the exploration of hostile terrain such as on the surface of Mars.

The center also designs robotic vehicles for hazardous waste sites and for agriculture.

- New products are currently under development using the **intelligent sensors technology**, e.g., inexpensive low power ice sensors and secondary water meter.
- Intelligent irrigation controllers licensed to **Campbell Scientific, Inc.**, Logan, Utah, have a projected sales volume of \$5 million a year over a seven-year period.
- **ProForm Fitness Products, Inc.**, Logan, Utah, estimates first-year sales of exercise equipment with center developed fuzzy-belt controller and fuzzy "spotter" to be \$40 million.
- **Monetary Services, Inc.**, Smithfield, Utah, using a center-developed neural network and computer-imaging technology, estimates a minimum of 30,000 installation sites for a device to be leased for \$1,000 a month.



## Summary Data:

### Current

|                          |           |
|--------------------------|-----------|
| 1996-97 Award .....      | \$125,000 |
| Matching Funds .....     | \$589,500 |
| Patents Issued .....     | 0         |
| Copyright Received ..... | 0         |
| License Agreements ..... | 3         |
| Spin-off Companies ..... | 1         |
| Companies Assisted ..... | 15        |
| Industry Jobs .....      | 1         |
| Center Jobs .....        | 11        |

### Cumulative

|                          |             |
|--------------------------|-------------|
| Awards .....             | \$535,000   |
| Matching Funds .....     | \$1,915,404 |
| Patents Issued .....     | 2           |
| Copyright Received ..... | 3           |
| License Agreements ..... | 3           |
| Spin-off Companies ..... | 1           |